Observations on the Genus Ocythoë *of* Rafinesque, *with a Description of a new Species. By* William Elford Leach, *M.D. F.R.S.* Read June 5, 1817. [*Phil. Trans.* 1817, *p.* 293.]

Several ancient and modern writers have described a species of Ocythoë often found in the Paper Nautilus, and have considered it as belonging to that shell. Sir Joseph Banks and other naturalists have maintained a contrary opinion, and have considered the Ocythoë as a parasitical inhabitant of the Argonaut's shell. Rafinesque, whose opportunities for observation were commensurate with his talent in observing, regarded it as a peculiar genus, allied to the *Sepia octopodia* of Linnæus, and as a parasitical resident of the above-mentioned shell.

The observations of the late Mr. John Cranch, zoologist to the Congo expedition, have, in the opinion of Dr. Leach, removed all doubt upon this subject. In the Gulf of Guinea he took several specimens of a new species of Ocythoë in a small Argonauta, and placed two of them in a vessel of sea-water, so as to observe their motions. When adhering to the basin the shell could be removed; they had the power both of retiring within it and of entirely quitting it. One having left the shell lived several hours, and showed no desire to return. Others quitted the shell while taking up the net. Ocythoë differs from the Polypus in the shortness of its arms; in having pedunculated instead of simple suckers; in having four oblong spots on the inside of the tube, and a small fleshy short tubercle immediately above the bronchiæ, on each side,—a character common to this genus, to Loligo, and to Sepia, but which does not exist in Polypus.

This paper concludes with a descriptive reference to the drawing, which shows the animal in and out of the shell. It is called by the author *Ocythoë Cranchii.*

The distinguishing Characters between the Ova of the Sepia, and those of the Vermes Testacea, that live in Water, explained. By Sir Everard Home, *Bart. V.P.R.S.* Read June 5, 1817. [*Phil. Trans.* 1817, *p.* 297.]

After alluding to the erroneous notions of Linnæus and other naturalists, concerning the animal that forms the shell called Argonauta, and to his own opinion that it is an internal shell, the author proceeds to show that this shell is not the produce of the species of Sepia often found in it, for the ova of this Sepia are not those of an animal of the Order Vermes Testacea. The blood of oviparous animals, while in the egg, is aërated through its coats; but in the Vermes Testacea, if the shell were formed in the egg, the process of aëration would be impeded; so that the animal's shell is formed after it has left the egg. Animals that live in water require some defence while the shell is forming; they are therefore inclosed in a camerated nidus. That of the *Helix ianthina,* taken in the voyage to the Congo,

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is described by Sir Everard Home. The ova are deposited upon its own shell; sometimes one only, sometimes several, contained in one chamber.

The animal found in the Argonaut shell by Mr. Cranch, had deposited eggs upon the lip of the shell; they were united by pedicles, like those of the *Sepia octopus,* and differed from those of the *Helix ianthina,* and other testaceous Vermes living in water, in having no camerated nidus, and in having a very large yolk to supply nourishment to the young animal when hatched; so that this animal, says Sir Everard Home, must be resolved into a species of Sepia; an animal which has no external shell, and which only uses the Argonaut when it occasionally gets possession of one.

Some naturalists not acquainted with comparative anatomy have thought they saw the Argonauta shell partly formed in these ova. The appearance they allude to is probably the unusually large yolk.

Astronomical Observations and Experiments tending to investigate the local Arrangement of the Celestial Bodies in Space, and to determine the Extent and Condition of the Milky Way. By Sir William Herschel, *Knt. Guelp. LL.D. F.R.S.* Read June 19, 1817. [*Phil. Trans.* 1817, *p.* 302.]

The construction of the heavens, in which the real place of every celestial object in space is to be determined, can only be delineated with precision when we have the situation of each heavenly body assigned in three dimensions, which, says the author, in the case of the visible universe, may be called longitude, latitude, and profundity. The angular positions of the stars given in astronomical catalogues, and on globes and maps, may enable us to find them by the eye or telescope; but their distance remains unknown; and unless a proper method for obtaining the profundity of objects can be found, their longitude and latitude will not enable us to assign their local arrangement in space. The method of parallaxes has succeeded with regard to objects comparatively near. The parallax of the fixed stars has also been an object of attention; and although the investigation has hitherto produced nothing satisfactory, it has given us a magnificent idea of the vast extent of the sidereal heavens, by showing that probably the whole diameter of the earth's orbit, at the distance of a star of the first magnitude, does not subtend an angle of more than a single second of a degree. To stars of a smaller size the parallactic method admits of no application.

Sir William Herschel proceeds to consider the local situations of the stars, and proposes a standard by which their relative arrangement may be examined; that is, by comparing their distribution to a certain properly modified equality of scattering, in which it is not required either that the stars should be equidistant from each other, or that those of the same nominal magnitude should be equally distant from us. A certain equal portion of space is allotted to every star, so that we may thus calculate how many stars any given ex-